

Immediate Continence Rates in RALRP: A Comparison of Three Techniques

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ABSTRACT

Background and Objectives: Robot-assisted laparoscopic radical prostatectomy (RALRP) is said to provide excellent long-term continence. In this study, we compared the early incontinence outcomes of our patients, who had undergone no reconstruction, posterior reconstruction only, or total anatomic restoration and posterior reconstruction.

Methods: We retrospectively analyzed the patients who underwent RALRP for localized prostate cancer by a single surgeon in our clinic from January 1, 2009–February 1, 2016. Continence was defined as no leakage or use of a safety pad for minimal leakage. The main outcome measure was continence at postoperative week 1 and months 1, 6, and 12.

Results: Between 2009 and 2016, 239 patients underwent RALRP for localized prostate disease. Seventy-four patients underwent a standard approach (group 1), 88 had posterior reconstruction (group 2), and 77 had posterior reconstruction with total anatomic restoration (group 3). After 1 week, 24.3% of the patients in group 1 (18/74), 31.8% in group 2 (28/88), and 45.8% in group 3 (33/72) were continent ($P = .02$). One month after the surgery, continence rates for groups 1, 2, and 3 were 56.7, 67, and 75%, respectively (0.065). After 6 and 12 months, continence rates for groups 1, 2, and 3 were 72.9 and 87.8%, 81.8 and 89.7%, and 84.7 and 91.6%, respectively ($P = .178$ and $.7484$).

Conclusion: Anatomic restoration improves continence rates in the early period after RALRP. Even though other parameters were higher in the total restoration group,

immediate continence (at 1 week) was significantly better.

Key Words: Continence, Reconstruction, Robot-assisted laparoscopic radical prostatectomy.

INTRODUCTION

Robot-assisted laparoscopic radical prostatectomy (RALRP) has been found to result in urinary continence rates as high as 97% at 12 months.¹ With a 3-dimensional view, magnification and more freedom of movement result in precise application of surgical techniques and avoid excessive dissection or damage to crucial tissues that may contribute to urinary continence.

To achieve maximum continence in a minimum of post-surgical time, various methods have been described. One of the most widely used techniques is posterior reconstruction with the Rocco stitch, which has been shown to improve both short- and long-term continence rates.² Anterior reconstruction techniques, total anatomic restoration, and fascia preservation techniques have been published, and all are thought to improve continence rates.^{3–5}

With the description of many methods for anatomic reconstruction to provide good continence results, the early return of continence is a goal in RALRP. In this study we sought to compare the early incontinence outcomes of our patients, whom we treated with RALRP using no reconstruction, posterior reconstruction only, or total anatomic restoration combined with posterior reconstruction techniques.

METHOD

We retrospectively analyzed the patients who underwent RALRP for localized prostate cancer performed by a single surgeon (V.T.) in our clinic between January 1, 2009–February 1, 2016. Of those patients, we included only those without positive surgical margins or biochemical recurrence. The surgeries in all patients were performed with the da Vinci SI or XI surgical systems (Intuitive Surgical Inc., Sunnyvale, California, USA). Our first cases

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DOI: 10.4293/JSLS.2016.00058

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Table 1.
Preoperative Demographics, Operative Statistics, and Postoperative Outcomes of Patients

	Group 1 (n = 74)	Group 2 (n = 88)	Group 3 (n = 72)	P
Age (years)	59.62 ± 6.10	60.69 ± 5.90	58.95 ± 6.08	0.185
BMI (kg/m ²)	27.05 ± 2.59	27.14 ± 2.61	27.52 ± 2.86	0.528
PSA	6.89 ± 1.64	7.06 ± 1.76	7.08 ± 1.71	0.748
Prostate volume (mL)	39.82 ± 12.48	38.38 ± 15.64	37.97 ± 13.88	0.705
IIEF score	21.25 ± 3.40	20.46 ± 3.72	20.26 ± 3.97	0.228
Blood loss (mL)	102.16 ± 8.8	101.13 ± 12.21	100.20 ± 8.97	0.517
Operative time (min)	172 ± 9.67	180.6 ± 12.77	198.19 ± 12.67	<0.001*
Hospital stay (days)	3.32 ± 0.93	3.25 ± 1.01	3.27 ± 0.98	0.891
Urethral catheterization (days)	9.25 ± 0.43	9.27 ± 0.51	9.29 ± 0.56	0.918

*Statistically significant with a confidence interval of 95%.

were generally either the standard approach or posterior reconstruction. With improved experience, we began to perform total anatomic restoration.

Patients with neurogenic bladder or a history of incontinence or urethral or pelvic interventions were excluded from the study.

Surgical Techniques

All RALRPs were performed by using the Frankfurt technique described by Wolfram and colleagues.⁶ Posterior reconstruction was achieved, as previously defined by using the Rocco stitch (a 3–0 V-Loc suture; Covidien, Minneapolis, Minnesota, USA).⁷ Total anatomic restoration was performed according to the published technique of Tewari and colleagues.⁴

After the operation, the drains were removed, and the patients were discharged on postoperative day 2, unless their drain output was higher than 100 mL/24 hours. The urethral catheter was removed at postoperative day 10. All patients were interviewed by the same physician 1 week and 1, 3, 6, and 12 months after the surgery. Continence was defined as no leakage or use of a safety pad for minimal leakage. The main outcome measure was continence at postoperative week 1 and at months 1, 6, and 12.

Statistical Analysis

All groups were compared by 1-way ANOVA or the Kruskal-Wallis test for continuous variables, and the χ^2 or Fisher’s exact test for categorical variables. Two-tailed $P < .05$ was statistically significant. Data are shown as means ± SD. Results were entered into an Excel for Mac

2011 database and analyzed with Statistical Package for Social Sciences (SPSS) 20 software for MAC (SPSS Inc., Chicago, Illinois, USA).

RESULTS

Between the years of 2009 and 2016, 234 patients underwent RALRP in our clinic for localized prostate disease that satisfied our criteria. Seventy-four patients underwent surgery with the standard approach, 88 had posterior reconstruction, and 77 had total anatomic restoration and posterior reconstruction. Patients who underwent RALRP with the standard approach were placed in group 1, those who had the standard approach and posterior reconstruction with the Rocco stitch were placed in group 2, and those who underwent total anatomic restoration with posterior restoration were placed in group 3. All patients had organ-confined disease with low risk. Mean patient age, body mass index (BMI), prostate specific antigen (PSA), prostate volume, and International Index of Erectile Function (IIEF) scores were similar among the groups (**Table 1**).

In group 1, 49 patients had a Gleason score of 3+3 and 25 had 3+4. In group 2, 59 patients were 3+3, and 29 were 3+4. In group 3, 48 patients were 3+3, and 24 were 3+4.

Mean blood loss was similar among the groups. Operative time, however, was significantly longer in group 3 compared to other groups. Hospital stay was also similar.

After 1 week, 24.3% of the patients in group 1 (18/74), 31.8% in group 2 (28/88), and 45.8% in group 3 (33/72) were continent ($P = .020$). One month after the surgery, the continence rates for groups 1, 2, and 3 were 56.7, 67, and 75%, respectively ($P = .065$). After 6 and 12 months, the continence rates for groups 1, 2, and 3 were 72.9 and 87.8%, 81.8 and 89.7%, and 84.7 and 91.6%, respectively ($P = .178$ and $.7484$).

Complications were assessed according to the modified Clavien’s classification system.⁸ There were no intraoperative complications during RALP in the 3 groups of patients. There were no multiorgan dysfunctions or deaths (grades 4 or 5). Prolonged paralytic ileus was managed conservatively in 4 patients, and fever and pain were managed with antipyretics and analgesic agents in 9 patients. Three patients needed blood transfusions. No patients presented with acute urinary retention after catheter removal.

DISCUSSION

In the past decade, RALRP has been one of the most favored techniques used to treat prostate cancer. The main reasons to decide on RALRP over other techniques are the lower rates of incontinence and impotence and good cancer control. These 3 aspects have been called a “trifecta.”⁹ When lack of complications and positive sur-

gical margins are added, and the term changes to a “pentafecta.”¹⁰

One of the most important elements of both the trifecta and pentafecta is continence. RALRP has been found to have excellent continence rates. In long-term follow-up, continence rates have been reported to be up to 96% at 12 months¹⁰ and up to 94.6% at 36 months after surgery.¹¹ In our study, similar to the literature, we had a mean rate of continence of 87.8% in a standard RALRP group in 12 months. With posterior reconstruction, the continence rates rose to 89.7%, and with total anatomic reconstruction, it improved to as high as 91.6%.

Even though the standard Van Velthoven technique¹² produced adequate results for long-term continence rates, for early and immediate continence, various methods have been proposed for posterior reconstruction. One of the most widely used methods is the Rocco stitch, described by Rocco and colleagues in 2009.² Even though their technique produces excellent continence rates at 3 months (92.8%), very early continence rates (at 1 month following surgery) are significantly lower than those at 3 months (40% vs 92.8%). Coelho and colleagues¹³ compared their series of 473 RALRP cases with posterior reconstruction with 330 patients without reconstruction. At 90 days, they found 91.1% and 91.8% continence rates in reconstruction and nonreconstruction groups, respec-

Table 2.
Urinary Incontinence Rates in Studies Comparing Different Approaches in RALRP

Study	Cases (n)	Continence Rates (%)			
		1 Week	1 Month	6 Months	12 Months
Coelho et al ¹³	PR (473)	28.7	51.6	91.1	97
	Standard (330)	22.7	42.7	91.8	96.3
Rocco et al ¹⁴	PR (31)	n/a	32.3	n/a	n/a
	Standard (31)		83.7		
Menon et al ¹⁶	AR+PR (59)	54	80	n/a	n/a
	Standard (57)	51	74		
Tan et al ¹⁷	AR+PR (1383)	30.8	n/a	91.7	98
	AR (303)	27		76.6	91.2
	Standard (214)	13.1		50.2	82.1
Present study	AR+PR (72)	45.8	75	84.7	91.6
	PR (88)	31.8	67	81.8	89.7
	Standard (74)	24.3	56.7	72.9	87.8

PR, posterior reconstruction; AR, anterior reconstruction; n/a, not applicable.

tively. In 7 days, however, the reconstruction group had significantly better continence rates (28.7% vs 22.7%; $P = .048$). Rocco and colleagues,¹⁴ in their comparative series, compared 120 patients who underwent RALRP with posterior reconstruction with 120 historic open retropubic radical prostatectomies. All prostatectomies in their series involved posterior reconstruction. They reported continence rates of 70% at 1 month, 93% at 6 months, and 97% at 12 months.

Various surgeons performed RALRP with anterior and posterior reconstruction. However, generally, anterior reconstruction was performed only with suturing the bladder to the puboprostatic ligaments or pubic bone.¹⁵ Menon and colleagues¹⁶ reported patients who underwent either standard or RALRP with anterior and posterior reconstruction techniques. They reported an incontinence rate of 51% in the standard group and 54% in the RALRP group after 7 days. They found no significant difference among groups. Tan and colleagues compared standard, anterior, and total reconstruction techniques and found that successful outcomes significantly favored total reconstruction at 1, 6, 12, 26, and 52 weeks after removal.¹⁷ Our study revealed similar results. One week after catheter removal, groups 1, 2, and 3 had continence rates of 24.3, 31.8, and 45.8%, respectively, with total anatomic restoration being the most successful, as mentioned in the literature. After 1 month, continence in the total anatomic restoration group improved to 75%, being the highest among groups. Groups 1 and 2 also had comparable continence rates (56.7% and 67%, both significant). It is clear that anatomic restoration improves continence rates in the early period after RALRP. The difference in continence rates at week 1 was statistically significant (P [It] .05). Even though other parameters seemed higher in the total-restoration group, immediate continence after 1 week was significantly better. Outcomes of groups and similar studies are summarized in **Table 2**.

We recognize the following limitations in our study: first, we had a small number of cases. Second, our study was retrospective in design. The first operations were performed with the standard approach and, with increasing experience, total anatomic restoration was preferred. Further experience may cause better continence rates. Also, the continence criteria were not strict. We accepted minimal leakage as continent, and that definition may have improved our outcomes for all groups. We believe a randomized controlled multi-institutional study would be the most successful.

CONCLUSION

Total anatomic restoration may have an important role in early return to continence (especially immediately after catheter removal), even though the long-term rates in the 3 groups were similar. Although nearly all patients undergoing RALRP are continent in the long term, we believe total anatomic restoration is the most effective approach for early return to continence.

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